TUMOURS OF THE LARGE BOWEL

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THE discovery of a mass or tumour in the large bowel demands careful study on the part of the medical attendant. Certain of these are produced as manifestations of acute inflammatory disease, the most common example of which is found in the ileo-cæcal region during the progress of an appendicitis; such a tumour is due to œdema and suppuration. Again a tumour of the large bowel may be of sudden production as in intussusception. Tumours of gradual production and development may result from a variety of causes of which the most common are tuberculosis, actinomycosis, diverticulitis and new growth. The present paper is concerned with diverticulitis and new growth. The writer has studied 107 cases taken from his private records, a summary of which is as follows:—

Rectum cancer of	41
Sigmoid cancer of	19
Cæcum cancer of	7
Transverse colon cancer of	8
Descending colon cancer of	2
Ascending colon cancer of	1
Appendix tumours of	4
Inflammatory tumours of large bowel	12
General carcinomatosis abdominalis	13
Total	107

These cases for the purpose of the paper may be studied in the following groups:—

Cancer of the rectum	41
Cancer of the large bowel exclusive of the rectum	37
Tumours of the appendix	4
General carcinomatosis	13
Inflammatory tumours	12
Total	107

Age:—	*Youngest years*	*Oldest years*	*Average years*
Cancer of rectum	21	82	51.22
Cancer of the large bowel exclusive of the rectum	33	77	57.3
General carcinomatosis	35	82	59.
Inflammatory tumours	22	80	45.4

Inflammatory tumours (diverticultis) are not uncommon in the large bowel. It is only in recent years that the etiology of such growths has been recognized. The clinical manifestations of diverticulitis have been carefully studied during the past twenty years by Bier, Wilson, Brewer, Moynihan and many others. The congenital forms are usually found at points where blood-vesssels enter, as in the epiploic tags or in the mesenteric line (Mayo). The acquired forms may occur anywhere in the intestinal wall and are more common in the sigmoid flexure and the descending colon than elsewhere. They are frequently multiple and consist primarily of herniated protrusions of the mucous membrane through the muscular coat, the serosa remaining intact as the outer covering of each diverticulum. As might be anticipated these diverticuli are not infrequently the seat of septic infection and so abscess formation or perforation may result. In this paper, however, we are mainly concerned with the fact that inflammatory thickening may occur about these diverticuli, giving rise to tumour formation and obstruction of the bowel implicated. The inflammatory thickening about a diverticulum may result in minute nodules on the bowel wall, in many instances not larger than a millet seed or a grain of rice. These small sessile bodies, particularly when they are multiple, may resemble at operation the little tubercles which are commonly found studded over the serosa in tuberculous peritonitis, or again they may be mistaken for the conditions found in general abdominal carcinomatosis. The writer has examined such small nodules under the microscope and has thus demonstrated the diverticulum which is the cause of the inflammatory thickening round about it.

In addition to these small nodules we frequently encounter a much more serious condition, the sequence of events being as follows:— diverticuli in a localized portion of the colon become the seat of inflammatory changes resulting in a pericolitis with much fibrotic thickening; there is an inherent tendency for this mass to increase in size and in some instances tumours of large dimensions may result. When the bowel wall is surrounded by this mass obstruction slowly develops as the fibrotic mass contracts and becomes of greater

density and firmness. Occasionally these inflammatory tumours, capable of causing obstruction, are multiple. In the gross they resemble malignant growths and it is interesting to find that in certain old museum specimens labelled "cancer," mounted prior to the time when as a matter of routine the histology of all tumours was submitted to the test of microscopic study, the true nature of these growths was not discovered. Certain of these tumours have been recently subjected to histological investigation with the result that many of them have been shown to be inflammatory and not malignant. Still more important is it to recognize the fact that diverticulitis may co-exist with malignancy. Massan reports from the Mayo Clinic that 14.65 per cent. of a series of 116 patients operated upon for diverticulitis showed malignant changes at the time of operation.

The fate of these inflammatory tumours deserves careful study; under favourable conditions, even those of very large proportions may disappear spontaneously. The favourable conditions may in some instances be provided by a colostomy opening proximal to the tumour; thus keeping the bowel at rest for a prolonged period at the seat of the trouble. Moreover it becomes apparent that a permanent cure may thus become established. In the last number of *Surgery, Gynæcology and Obstetrics* (June, 1925*) I have given the detailed clinical history of two such cases; in both instances the patients remain in excellent health fifteen years after the disappearance of tumours of extraordinarily large size. In one instance a farmer at the age of forty-seven suffered intestinal obstruction because of a mass which filled the pelvis; it could be palpated above the pubis and was within easy reach of the examining finger on rectal examination. After a colostomy this man recovered, the tumour disappeared, the colostomy opening was closed and the man is still alive; at the age of sixty-two he continues to do a full day's work on the farm and enjoys perfect health. The other case, full details of which are also available in the paper referred to, was a female aged twenty-two who had a very large tumour attached to the left iliac fossa; it had been diagnosed as sarcoma. Operation revealed a growth surrounding the sigmoid flexure of the colon, a portion of which was removed and proved histologically to be composed of inflammatory tissue only; a fæcal fistula developed spontaneously, the tumour gradually disappeared, the fæcal fistula closed and the patient was well four months after the operation. This patient subsequently married and has two healthy children. She is now thirty-seven years of age and has enjoyed perfect health since the operation fifteen years ago. Two other cases of more recent date were narrated in my paper, in one of which a tumour had disappeared after colostomy and the patient is now well six years after operation; in the other the tumours were multiple, they disappeared after a cæcostomy which was kept open for a year and then closed. The patient at present enjoys good health four years after operation.

As the study of diverticulitis and the tumours resulting therefrom is of comparatively recent date (twenty years), I thought it might be a contribution of some value to our knowledge of their life history, to record the fact that, under favourable conditions, they may disappear spontaneously and a permanent cure may result as evidenced in two of my patients who remain in excellent health fifteen years after the disappearance of massive growth. In view of the possibility of co-existing malignancy it might well be argued that the ideal operation for diverticulitis is radical removal. In all the cases referred to above radical operation of that nature was impossible. It therefore remains an interesting fact that in a large percentage of these cases a permanent cure may be effected by simple means.

Cancer of the rectum.—I do not propose to study this subject at length but will record a few observations as a result of the clinical study of my cases. The condition is curable if operated upon at an early stage of its development. The prognosis of cancer of the rectum in this respect does not differ from that of cancer in other parts of the body, e.g. the breast or the buccal cavity. Moreover, in virtue of the fact that these cases do not metastasise early, a comparatively simple operation, with wide removal of the primary growth will effect a cure in early cases, where the disease is still localized to the rectum and has not invaded the

*Massive tumours due to diverticulitis of the large bowel.—A. Primrose, vol. xl, June, 1925, p. 825.

peri-rectal tissues. It therefore becomes imperative to recognize the growth early. Unfortunately the disease may progress greatly before any very serious symptoms have manifested themselves and the medical practitioner and the patient may both be misled. It is characteristic of malignancy in all parts of the body that where the growth is capable of extending without interfering with the function of the part affected, it may develop extensively before it is discovered. A striking example of this is found in the stomach. A cancer in the body of the stomach often reaches very large dimensions before it produces any symptoms whatever, but if a cancer appears at the pylorus, gastric stasis is produced early and symptoms of serious trouble soon manifest themselves. So too malignant disease may extensively invade the cæcal wall without producing untoward symptoms. One kidney may be the seat of a large malignant growth which has only been diagnosed when a tumour is accidently discovered. In the rectum, in virtue of its cubic capacity, a growth may attain large size before obstructive symptoms occur. Rectal cancer, however, tends to ulcerate and bleeding occurs. Here we have an early symptom which may often give a clue to a correct diagnosis. Most people suffer from piles to a greater or less degree and hence the popular belief that fresh blood in the stools is indicative of what is generally described by the laity as "bleeding piles." A remarkably large percentage of my cases of rectal cancer, and I am sure my experience is not exceptional, have come to me stating that they have been treated by some medical practitioner for "bleeding piles." Thus most valuable time is lost and the prospect of a radical cure may have been sacrificed. It should therefore be an unbroken rule of practice to make a thorough digital examination of the rectum, as high as one can reach, in every case where blood is passed in the stools. Diarrhœa and tenesmus may also supervene, and the patient sometimes complains of a dull ache referred to the perineum and the sacral region. Eventually obstruction is established.

It is an undoubted fact that by far the largest number of cases of cancer of the rectum remain undiscovered until it is too late to effect a cure. Every effort therefore should be made to instruct the laity, so that they may not overlook symptoms which might appear to them trivial. On the other hand the practitioner should be thorough in his examination of all rectal cases.

The modern radical treatment of cancer by operation postulates the removal of the primary focus of disease, along with the lymphatic channels and the lymph glands which drain the affected area and which may be the seat of secondary tumour formation. This principle is, for example, carried out universally to-day in the surgical treatment of cancer of the breast but it is a very different problem when we come to deal with cancer of the rectum, where we find it difficult to apply these principles of the radical treatment of malignant disease. The splendid work of Mr. Alexander Miles has demonstrated the necessary minimum scope of a radical operation, including as it does the resection of the affected portion of the bowel and the dissection of the lymph glands and gland bearing fascia not only in the mesentery but in the ischio-rectal fossa of the perineum. This extensive operation, as conducted by Miles, is of the combined abdomino-perineal type with the establishment of a permanent colostomy. The operative mortality in such operations is very high, estimated by various surgeons from 15 to 60 per cent. It can be shown that in very early cases a cure may be effected by much less radical means, while in advanced cases such a radical operation holds out little prospect of success. Personally I have come to the conclusion that resection of the bowel alone is the operation for choice in early cases, while in advanced cases one may use one's judgment as to whether or not the complete radical procedure of Miles should be carried out.

The value of radium and deep x-ray therapy has not yet been determined. Certain inoperable cases under my care have been subjected to such treatment with very positive results, causing the tumour growth to diminish or to disappear entirely as far as one's observation was capable of determining. In five instances where beneficial results were obtained from radium treatment, the growth eventually recurred and a fatal issue ensued. One of these cases is worth recording: a man fifty-five years of age, a school teacher, was seen by me in

consultation suffering from a large cauliflower-like growth in the rectum, fixed and inoperable. He was subjected to radium and high voltage x-ray treatment with a result which was apparently ideal; the growth entirely disappeared. He was then persuaded by his friends to visit one of the best known clinics in the United States where he was subjected to a very thorough examination. He was told that no growth existed and further, the examining clinician expressed the view that he could not believe he had ever had a growth! This man returned to Toronto and told his story; he died eighteen months subsequently with recurrent cancer in the rectum.

One's attitude towards radium and deep x-ray therapy in malignant disease of the rectum and in malignant disease elsewhere is one of expectancy. Beyond all question we know that the growth of the cancer cell is profoundly influenced and often destroyed by radiation. There is, however, a residuum left which seems difficult or well-nigh impossible to eradicate. Thus far in rectal cancer I know of no permanent cures. We have a group of earnest, highly qualified, specialists working in this field; they have not as yet arrived at definite conclusions but a study of their activities thus far gives us hope that ere long the curative effect of radiation will be enhanced by determining more effective methods in the use of these measures. We can, at this juncture, express our admiration for the determined effort made by our specialists in radium and x-ray therapy. We should do all in our power to assist and encourage them in their work; the prospect of ultimate success is most favourable.

Cancer of the large bowel, exclusive of the rectum.—The outlook in these cases is much more favourable; in fact if early radical treatment is carried out the prospect of effecting a radical cure is quite as favourable as it is in malignant disease elsewhere in the body. The fact remains that in many instances the disease is far advanced before relief is sought.

It is an undoubted fact that the early symptoms may be overlooked by the medical attendant. The incomplete obstruction of which these patients frequently complain may often be relieved by mild catharsis, and so patient and the medical attendant are lulled into a position of false security, with the result that valuable time is lost. We would, therefore, urge most careful investigation of all patients, particularly at the cancer age, who begin to show signs of obstruction. The discovery of a mass or tumour on examining the abdomen as a rule demands a laparotomy. Blood in the stool suggests serious trouble; its source should never be left a matter of mere conjecture; these malignant growths tend to ulcerate, and hæmorrhage from the bowel not infrequently antedates the onset of obstruction. The study of x-ray plates after a barium meal is invaluable in assisting us to establish a diagnosis.

The bowel proximal to the seat of the growth becomes distended and if the obstruction is slowly produced the muscularis becomes hypertrophied. When the obstruction is low down, e.g. in the sigmoid, the distension of the bowel above may stop suddenly at the ileo-cæcal valve or it may extend into the ileum. Even in complete obstruction with enormous distension of the proximal colon the distension may be restricted to the large bowel. This depends upon the efficiency of the ileo-cæcal valve (ileo-cæcal sphincter). When the valve is efficient the small intestine is capable of pumping large quantities of fluid material or semi-fluid material into the distended bowel against great resistance, and no regurgitation occurs. On the other hand, if the valve is inefficient the small bowel becomes distended. In the latter case vomiting is sure to be an urgent symptom but where the distension is confined to the large bowel we frequently note the absence of vomiting. One has often had the opportunity of verifying these facts regarding distension on the operating table. My main object in referring to it is to emphasize the importance of noting that vomiting, an early symptom in most cases of acute obstruction may be absent in cancer of the large bowel.

Loss of weight is always a late symptom which, while it is important to note its occurrence, is of little value in helping us to arrive at a diagnosis. Pain coming on suddenly and acutely, of an intermittent type, is characteristic of obstruction in the large bowel. In some instances visible peristalsis is noted but it is absent where the distension has assumed large proportions.

As to treatment I would like to urge that no routine method should be advocated as appli-

cable to all cases. The surgeon who opens the abdomen to-day should never be the slave of any "routine." He should be prepared to deal with conditions as he finds them, without any preconceived determination to perform a particular type of operation. There are many methods of dealing with such cases and the procedure in the individual case should only be determined when the abdomen is opened and precise information gained as to the conditions present. Conditions may warrant the excision of the growth and attached mesentery and an immediate end to end anastomosis with closure of the abdomen without drainage. In certain advanced cases it may be impossible to remove the disease, particularly where, in addition to extensive local trouble, there are metastatic growths elsewhere, e.g. in the liver. In such cases it may be possible to perform a lateral anastomosis to short circuit and relieve obstruction; or, if the disease is low down in the pelvic colon, to perform a colostomy. In many cases, particularly in acute obstruction or in the presence of abscess formation, one has found the two-stage Mikulicz operation of inestimable value.

General carcinomatosis abdominalis. — This condition is almost invariably secondary to a primary focus situated within the abdominal cavity. Moreover, by far the most fertile source is a primary malignant papilloma of the ovary. It is significant that every one of the series of thirteen cases reported in this series occurred in the female.

It is very remarkable to note possibilities as to the prolongation of life in certain of these cases. Thus Mrs. O. N., *aet.* thirty-six, was seen by me in 1909. A year previously a laparotomy had been performed and an inoperable malignant mass was found in the pelvis She developed a general carcinomatosis with ascites and I drew off a large amount of ascitic fluid. In subsequent months I tapped the peritoneal cavity many times, drawing off from eight to twenty-four quarts of fluid each time; numerous masses were noted as the fluid was withdrawn. She died in June, 1914. In other words she lived for six years after the first discovery of an inoperable tumour. It is also worthy of note that morphia was administered in large quantities for the relief of pain. She actually took one grain of morphia every two hours for two years immediately preceding her death, twelve grains a day or a total of grs. 4,380 in two years. Under morphia she enjoyed a remarkable degree of comfort.

A still more remarkable case was Mrs. LeD., *aet.* fifty-eight. In December, 1908, I removed a large cauliflower mass, a papilloma of the right ovary and in addition a similar cystic mass, which had not erupted, of the left ovary. At the time of operation I could discover no implantation growths on the neighbouring serosa. The patient went west to the Pacific Coast and I saw her again, for the first time since my operation, in May, 1924, with a history that some months previously she had been operated upon in Vancouver, when an unsuccessful attempt was made to remove a malignant mass in the pelvis. For some months she had been tapped once a fortnight for free fluid in the peritoneal cavity. The patient is still alive in Toronto and is tapped regularly for her relief. This patient therefore is still alive seventeen years after the removal of a papilloma of the ovary which had erupted into the peritoneal cavity.

A third interesting case in my series was that of Mrs. T., *aet.* fifty-one, whose abdomen I opened in October, 1907 General carcinomatosis was found and the abdomen closed. A large mass developed in the pelvis. My interest in this case consisted in the experience one had as the result of an attempt to use the ascitic fluid after the manner suggested by Hodenpyle, of New York, who at that time seemed to have secured beneficial results by the subcutaneous injection of the ascitic fluid of patients suffering from carcinoma in the control of malignant disease in other patients. In my case I tried an auto-injection. Some of the ascitic fluid from her abdomen was injected under her breast. Some twelve or fifteen injections were made. As a result a tumour appeared in the right breast with a palpable mass of glands in the axilla! This experience seemed to illustrate the remarkable facility with which carcinomatous cells, in a case of carcinomatosis, may be implanted elsewhere.

It is a notorious fact that we have occasionally cases of spontaneous disappearance of general carcinomatosis with apparent permanent cure. The instances I have cited, however, illustrate a continuous process of slow develop-

ment. Moreover in view of the fact that one of my patients, whose history is recorded above, is still alive after seventeen years, it becomes questionable if we are ever sure of a cure becoming permanent. Possibly in these cases of apparent cure the disease remains more or less dormant and may at a future time become active and finally progress to a fatal issue.

PRIMARY PAPILLARY EPITHELIOMA OF THE URETER*

Report of a Case

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RECENT excellent reviews on the subject of primary papillary epithelioma of the ureter have been published by Judd and Struthers, Aschner, Meeker and McCarthy, and Kretschmer. The tumours of epithelial origin comprise the majority of the primary tumours and of these the papillary epitheliomas predominate.. Kretschmer gives the proportion of nineteen cases of papillary carcinoma to seventeen cases of other types of carcinoma. Most authors make a clear-cut distinction between benign papilloma and papillary carcinoma. That such distinction cannot always be relied on is emphasized by a case reported by Thomson-Walker in 1921 in which the tumour was diagnosed as a simple villous papilloma and the patient died five months after operation from metastasis to the abdomen, including the liver.

A man, aged fifty-four, registered at the Mayo Clinic, May 5, 1922, with a history of having had for a year, severe pain in the right lumbar region radiating anteriorly and downward to the genitals. In June, 1921, the pain was associated with marked dysuria and occasionally total hæmaturia. In August, 1921, on cystoscopic examination, a small stone was removed from the bladder. Since then the patient had had several similar attacks of pain, and for the last two weeks it had been constant in the right groin and suprapubic area.

The systolic blood pressure was 114, the diastolic 68. The specific gravity of the urine was 1.011; it was acid in reaction, contained albumin. 1,† red blood corpuscles 2, and pus 1. The phenolsulphonephthalein return was 65 per cent. The hæmoglobin was 75 per cent. The Wassermann reaction was negative. Roentgenograms of the kidneys, ureters, and bladder were negative. On cystoscopy the bladder was found to be normal, and the prostate gland moderately enlarged. . Both ureteral orifices were normal in appearance and the urine secreted was clear. Both ureters were catheterized without difficulty. The differential function was normal and the collected specimens of urine negative. A right pyeloureterogram was made which showed dilatation, 1, of the pelvis and calyces. It was concluded that a renal calculus had probably passed during the attack of colic previous to the examination. Following cystoscopy the patient had a very marked reaction and passed bloody. urine for two days.

The patient returned to the clinic August 8, 1924. He had been perfectly well until two months previous to his return, when he noticed a backache located low across the hips, more on the right side, and radiating slightly down both legs. There was no history of trauma or strain. One month before while taking baths for his backache, he had had a painless total hæmaturia with the passage of clots. His weight and strength had decreased markedly in the last two months and he walked with a cane.

The systolic blood pressure was 110 and the

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†In this paper the amounts of albumin, red blood cells, and of pus in the urine are graded by the figures "1" to "4". For the degree of dilatation of the renal pelvis, the extent of enlargement of the prostate, and the degree of malignancy of the tumour the same symbols are used. [EDITOR].